

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 29 MAR 2006

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Applicant's or agent's file reference P00580WO	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/GB2004/005159	International filing date (day/month/year) 10.12.2004	Priority date (day/month/year) 10.12.2003	
International Patent Classification (IPC) or national classification and IPC INV. B65G35/06 B65G13/11 B65G39/10 B65G37/02 B65G47/54		CORRECTED VERSION	
Applicant GENOME RESEARCH LTD et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 05.07.2005		Date of completion of this report 29.03.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized officer Papatheofrastou, M Telephone No. +31 70 340-4422	



**INTERNATIONAL PRELIMINARY REPORT
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International application No.
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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-18 as originally filed

Claims, Numbers

1-18 received on 28.09.2005 with letter of 04.07.2005

Drawings, Sheets

1/18-18/18 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application,
 - ☒ claims Nos. 17, 18
- because:
- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
 - ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
 - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
 - ☒ no international search report has been established for the said claims Nos. 17, 18
 - ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
 - ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
 - ☒ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT
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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☒ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-16 .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	10-16
	No: Claims	1-9
Inventive step (IS)	Yes: Claims	11
	No: Claims	1-10,12-16
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item III

1. This Authority considers that claim 18 does not comply with PCT Rule 6.2 (a).

Therefore no establishment of opinion can be made with respect to claim 18.

Re Item IV

3. This Authority considers that there are two inventions covered by the claims indicated as follows:

I: Claims 1-16 directed to a modular unit for transporting work pieces and array of modular units

II: Claim 17 directed to a tensioning arrangement for a belt or chain drive

The reasons for which the two inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The features of the two claimed inventions solve different technical problems by means of different special (or potentially special) technical features.

The problem to be solved by the first invention is to provide a transport unit for work pieces which can be easily adaptable to different space arrangements.

The problem to be solved by the second invention is to provide a belt or chain tensioning arrangement.

The prior art document EP-A-0 721 900 discloses a modular conveyor unit having all the technical features of claim 1. The further objective problem can be formulated as how to coordinate the transportation from one unit to the next. This is solved by providing control means having direct communication to the direct neighbouring units.

The second invention of claim 17 yields the potential special technical feature of providing tensioning means with first and second arms simultaneously used against

respectively opposite runs of the belt. This is not disclosed in EP-A-0 721 900.

The special (or potential special) technical features of the two inventions are different and solve different technical problems, hence there are no common or corresponding special technical features on which a technical relationship can be based, within the meaning of PCT Rule 13.2, between the first and second inventions. Therefore the application does not meet the requirements for unity of invention as defined by PCT Rule 13.1.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2. Reference is made to the following documents:

- D1: EP-A-0 721 900 (THE INTERLAKE COMPANIES INCORPORATED) 17 July 1996 (1996-07-17)**
- D2: US 2002/108842 A1 (BONORA ANTHONY C ET AL) 15 August 2002 (2002-08-15)**
- D3: DE 39 42 594 A1 (ROBERT BOSCH GMBH, 7000 STUTTGART, DE) 27 June 1991 (1991-06-27)**

Novelty

2.1 The subject-matter of independent claim 1 is not new in the sense of Article 33(2) PCT.

Independent Claim 1

2.2 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses in column 2, line 8 to column 5, line 49, figures 1-9 (the references in parentheses applying to this document):

A modular unit (12,17) for transporting work pieces and suitable for use in an array of

such units, comprising a top (13); transportation means (14,16) which propel the work pieces onto and/or off said top and against which the work pieces rest when located on the top of the unit, the transportation means being part of said top; control means (72 actuator, column 2, line 54 to column 3 line 2, column 5, lines 42-45, figure 3) for controlling the driving of said transportation means and a top plate (13) segregating said control means (72) from any work piece being transported; wherein said driven transportation means are located substantially in at least two spaced apart locations (In figure 1, look at module 12B two wheels 16 spaced apart or module 17 wheels 166, 165, 164) of said top and the space between said locations is not occupied by driven transportation means but is suitable for receiving a work piece treatment device.

All technical features of claim 1 are known from D1.

2.3 Document D3 also anticipates claim 1.

Dependent Claims

2.4 Dependent claims 2-16 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step. The reasons are as follows:

2.5 Document D1 discloses all technical features of claims 2-9.

2.6 The features of claims 10, 12-16 have already been employed for the same purpose in a similar modular unit for transporting work pieces, see document D2, page 3, paragraph 34 to page 8, paragraph 67, figures 1-15. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a modular unit for transporting work pieces according to document D1, thereby arriving at a modular unit for transporting work pieces according to claims 10, 12-16. The subject-matter of claims 10, 12-16 does therefore not involve an inventive step (Article 33(3) PCT).

CLAIMS

1. A modular unit for transporting work pieces and suitable for use in an array of such units, comprising a top; driven transportation means which propel the work pieces onto
5 and/or off said top and against which the work pieces rest when located on the top of the unit, the transportation means being part of said top; control means for controlling the driving of said transportation means and a top plate segregating said control means from any work piece being transported; wherein said driven transportation means are located substantially in at least two spaced apart locations of said top and the space between said
10 locations is not occupied by driven transportation means but is suitable for receiving a work piece treatment device.
2. A modular unit according to claim 1, wherein the transportation means are located substantially about the periphery of the top and the region of the top of the unit located
15 within the periphery of the top is suitable for receiving a work piece treatment device.
3. A modular unit according to either of the preceding claims, wherein the transportation means comprise a wheel, a drive causing the wheel to rotate, and means to selectively engage the wheel with a work piece, when a work piece is located on the top of the unit.
20
4. A modular unit according to any preceding claim, wherein the unit comprises at least one wheel for driving the work piece in one direction and at least one second wheel which selectively engages the work piece and is oriented, in use, in a second direction.
- 25 5. A modular unit according to claim 4, wherein the unit's at least one second wheel not only engages the work piece but is adapted to lift the work piece so that the work piece only engages the second wheel.
6. A modular unit according to either claim 4 or claim 5, wherein the unit's at least one
30 wheel and the unit's at least one second wheel are orthogonal one relative to the other.
7. A modular unit according to claim 1, wherein the unit comprises two compartments: one for receiving a work piece treatment device located in an upper compartment of the

unit and a second containing the control electronics; and a separating member is provided to seal the second compartment from the first compartment.

5 8. A modular unit according to any preceding claim, wherein work piece lifting means are provided to lift the work piece, the lifting means being sufficiently spaced to allow the transportation means to continue to transport work pieces whilst lifting one work piece.

10 9. An array of modular units, wherein the units are each in accordance with any of claims 1 to 8 and of substantially equal height and control means are provided to control the displacement in the X and Y plane from one unit to another.

15 10. An array of modular units according to claim 9, wherein each unit's control means allows the direct communication from one unit to its direct neighbouring units, whereby the transportation from one unit to the next may be coordinated.

11. An array of modular units according to claim 9, wherein a further array of modular units is suspended above the units comprising work piece treatment devices.

20 12. An array of modular units according to claims 9, 10 or 11, wherein the control means stores a number of operative protocols dependent on work piece types, selects the appropriate operative protocol dependent on the work piece to instruct the operation of a series of units, and scheduling means are provided, whereby several protocols may run in parallel in the array of modular units.

25 13. An array of modular units according to any of the preceding Claims, wherein one or more plates are provided with recessed portions into which modular units are selectively inserted and removed.

30 14. A modular unit according to any of the preceding Claims, comprising means which protrude from the top of the unit and which are so sized and shaped to engage a conical recessed portion of a work piece when located on the top, whereby the position of the work piece on the top of the unit may be accurate.

15. A modular unit according to Claim 3 onwards, wherein it operates in conjunction with a pallet which has one or more recessed tracks corresponding to one or more wheels.
- 5 16. A modular unit according to any of the preceding Claims, comprising a sensor for sensing the position of a work piece when located over said sensor.
- 10 17. A tensioning arrangement, for a belt drive or chain drive of the kind in which a temporarily induced slackness in the belt or chain must be compensated automatically and followed, if subsequently necessary, by a correspondingly opposite sense movement of the tensioning means to release the tension previously imposed; characterised in that the tensioning means comprises first and second arms arranged in a mirror-image formation to bear simultaneously in use against respectively opposite runs of the belt or chain.
- 15 18. A modular unit or an array of modular units or a tensioning arrangement substantially as hereinbefore described with reference to and/or illustrated in any appropriate combination of the accompanying text and/or figures.